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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/511,158	02/23/2000	Hidekazu Nakamoto	500.36898VX1	4119

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EXAMINER	
LEUNG, JENNIFER A	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/511,158	NAKAMOTO ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on December 16, 2004 has been received and carefully considered. Claims 3-6 and 8-11 are cancelled. Claims 1, 2 and 7 remain active.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothert et al. (US 3,761,059) in view of Hohlbaum (US 4,244,923).

Regarding claims 1, 2 and 7, Rothert et al. discloses a reactor comprising:

a) a substantially horizontal cylindrical vessel (i.e., cylindrical closed reaction vessel **20**) provided with an inlet at a lower part at one end thereof (i.e., inlet **22** for flowable material **23**), an outlet at the lower part at the other end thereof (i.e., outlet **24** for material **23** discharge), and an outlet at the upper part thereof (i.e., for vapor or gas connection **50**); (column 4, line 61 to column 5, line 18; FIG. 1); and

b) a stirring rotor (i.e., agitating and propulsion apparatus **26**) provided with a plurality of hollow disks (i.e., annular discs **220** to **220s**) in the longitudinal direction thereof located within the cylindrical vessel **20**, the hollow disks **220** to **220s** being connected to each other by longitudinal stringers **116** that are welded to and pierce through the disks, each between adjacent hollow disks **220** to **220s** at their peripheries (column 5, lines 19-28; FIG. 1, 2);

wherein stirring rotor **26** is without any rotating shaft at the position of a rotating center axis (FIG. 1, 2; column 2, lines 14-48; column 3, lines 53-62; column 5, lines 19-28) and is provided with a support member at one end of the stirring rotor (i.e., stub shaft portion **110'** at inlet **22** end of the vessel; FIG., 1, 10) and another support member at the other end thereof (i.e., stub shaft portion **112'** at outlet **24** end of the vessel; FIG. 1, 10); the outer diameter of the another support member **112'** being smaller than the outer diameter of the stirring rotor **26** (see FIG. 1, 8, 10), and the another support member **112'** further comprising scraping vanes (i.e., vanes of screw-shaped stripper **221** or **221'**) on the vessel inner end wall-facing side (i.e., facing the fixed opposing surface **222** of vessel **20**); (column 3, lines 29-39; column 6, line 65 to column 7, line 5).

In view of the newly added structural limitations, Rothert et al. does not explicitly state that the support members **110',112'** comprise a "disk shape". However, the illustrations of support members **110',112'** show the support members being substantially of a disk shape (i.e., as shown in side view in FIG. 10, elements **110',112'** are illustrated as flat plates; as shown in front view in FIG. 8, the elements are circular). In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select a disk shape for the support members **110',112'** in the apparatus of Rothert et al., on the basis of suitability for the intended use, because changes in shape would merely involve routine skill in the art.

Rothert et al. also discloses the stirring rotor **26** being divided into a plurality of stirring blocks having structure based upon the viscosity of the liquid feed (i.e., by using disks **220** to **220s** with larger holes or lattice interstices at one end of the apparatus than at the other; or by arranging the spacing between disks **220** to **220s** closer to one another at one end of the apparatus than at the other; or by providing disks **220** to **220s** which are more strongly inclined at one end of the apparatus than at the other); (see column 2, lines 55-68; column 3, lines 40-52; column 4, lines 16-32; column 7, lines 35-63).

Rothert et al. discloses the longitudinal stringers **116** provided each between adjacent hollow disks **220** to **220s** "can be given appropriate profiles for performing a scooping function," (column 4, lines 4-8), and illustrates an example of such profile in FIG. 4, wherein stringers **116** are configured as longitudinal stringers **117** provided with a U-shape cross section, for reinforcing the streak-flow of flowable material **23** on disks **220** to **220s** and for reinforcing the formation of veil or film formation at the inner periphery of the discs, in the manner of scoop elements **225** (column 6, lines 25-46; see FIG. 9). Rothert et al., however, is *silent* as to whether the longitudinal stringers **116/117** may comprise scraping plates each between adjacent hollow disks **220** to **220s**, for scraping the liquid feed attached to the inside wall of the vessel **20**.

Hohlbaum teaches a contactor (FIG. 1, 1A, 5-7) comprising a stirring rotor provided with a plurality of axially spaced, circular discs **13** in a longitudinal direction thereof, placed within a cylindrical vessel (i.e., cylindrical drum **12**), wherein the plurality of discs **13** are connected to each other by a plurality of "buckets **20**", which are carried by and extend between each of the adjacent discs **13** at their peripheries. "Buckets **20**" function essentially like the "U-shaped longitudinal stringers **117**" of Rothert et al., by collecting the flowable material at the lower portion of the cylindrical vessel and distributing the material at the upper portion of the

cylindrical vessel, upon rotation of the stirring rotor. Additionally, Hohlbaum teaches the provision of plough blades **27** to the stirring rotor, the blades **27** extending from and forming a continuation of two diametrically opposed buckets **20** (see FIG. 5, 6), or provided as separate plates from the buckets **20** (see FIG. 7), and functioning essentially as the instantly recited "scraping plates". The plough blades **27** help avoid the formation of a stationary layer of solids in the annular passage **14** at the bottom of the drum **12**, which can impede the flow of slurry through the contactor (column 3, line 67 to column 4, line 17).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the scraping plates as taught by Hohlbaum to the stirring rotor in the apparatus of Rothert et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the plates help avoid the formation of a stationary layer of solids at the bottom of the cylindrical vessel, as taught above.

Response to Arguments

3. Applicant's arguments filed on December 16, 2004 have been fully considered but they are moot in view of the new grounds of rejection, necessitated by amendment.

On page 9, lines 3-7, of the response, Applicants argue,

"The contention by the Examiner... that the outer diameter of the another support member **112** is smaller than the outer diameter of the stirring rotor **26**, in Rothert, et al., is noted. However, it is respectfully submitted that the member **112** in Rothert, et al. is a stub shaft, not a support member as in the present claims. It is respectfully submitted that the screw-shaped stripper **221** as described in Rothert, et al. corresponds to the support member as in the present claims; however, the screw shaped stripper **221** in Rothert, et al. does not have a disk shape, contrary to the present claims which recite support members having a disc shape."

In the new grounds of rejection, above, the Examiner asserts that the stub shaft correctly corresponds to the support member as claimed, and the screw shaped stripper correctly corresponds to the scraping vanes as claimed. As illustrated in FIG. 1 and 10, it is apparent that the stub shaft comprises two portions: an elongated shaft portion designated as element **112** in FIG. 1, and an end disk-shaped portion of larger diameter than the shaft portion **112**, unlabeled in FIG. 1 but designated as element **112'** in FIG. 10. Thus, the apparatus of Rothert, et al. structurally meets the claim amendment by comprising a support member **112'** having a disk shape, and scraping vanes **221** or **221'** on the support member **112'**.

On page 10, lines 17-21, of the response, Applicants argue,

> "... Hohlbaum is primarily concerned with a solid/liquid contactor including a drum with annular passages between the drum periphery and compartment forming discs. It is respectfully submitted that one of ordinary skill in the art concerned with in Rothert, et al. would not have looked to the teachings of Hohlbaum, directed to different technologies and different functions."

In response to applicant's argument that the contactor as taught by Hohlbaum is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Rothert, et al. and Hohlbaum are concerned with the particular problem of providing thorough mixing of a flowable material. In fact, Rothert, et al. (column 8, lines 62-66) discloses that,

> "The term "mixing" as used herein is meant to include the mixing together of *two or more substances*. It is also meant to include the *homogenizing of a single substance* which is undergoing chemical changes such as in the production of polyester."

Thus, the mixing as taught by both Hohlbaum and Rothert et al. represent analogous art, and one having ordinary skill in the art would have been properly motivated to apply the teachings of Hohlbaum to the apparatus of Rothert et al.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Leung
February 28, 2005

Hien Tran

HIEN TRAN
PRIMARY EXAMINER